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ABSTRACT

Curriculum change and the dynamics of this change were explored by means of a case study of secondary social studies, science, and vocational education curriculums in Gary, Indiana, between 1940 and 1970. The time period is characterized by both unprecedented effort to produce change and slow change in the schools. The study asked how this could be. Talcott Parson's hierarchy of levels; Charles Perrow's notion of goals, technology, and structure; and Kirst and Walker's assumption that curriculum decisionmaking was "political," were used to conceptualize and stabilize the data as curriculum development was traced through the time period. The study findings revealed that change occurred in small ways in individual classrooms -- by policy decision and by organizational "drift." Change and financial resources were found to be related. School system resources were used for "maintenance" of the system; few resources were left for innovation. The advent of federal funding (NDEA, Vocational Education Act of 1963) brought additional funds, which permitted the curriculum change that the Gary school system could not bring about with its own limited resources. (This paper is a shorter version of an NIE sponsored study made of the Gary, Indiana, Public School Curriculum.) (Authors)

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# THEORY AND PHENOMENON IN CURRICULUM RESEARCH:

# THE CURRICULUM AS A SOCIAL SYSTEM*

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I

In this paper we wish to explore the most fundamental problem that must face all who wish to think about the task of improving schooling. The curriculum of the schools must be, we have been told again and again, relevant and adaptive to needs, self-renewing, and emergent. Our task as educationists is to teach this aspiration and act as if it were a feasible ideal. But schools in reality, all too often as we know, fall far short of the ideal. Indeed practice so often seems so far from our image of what should be that frequently we are reduced to despair of the schools as they are, and we react to despair by projecting our frustration onto one or another aspect of the schools--their organization and administrative style, their clienteles, or their teachers according to predilection. We tend not to face the issue that the ways in which we see the problem of innovation may be one source of our failure to effect lasting changes in school practices and programs. This is the possibility we will address here; it is not our purpose to argue against the aspiration for improvement which lies at the heart of all normative thinking about education, or to locate a new bête noir, rather we want to argue that, as we rehearse ways and means for giving meaning to a commitment to the improvement of schooling, we must see the schools as organizations, and the curriculum of the schools, in more complex ways than have been traditional. In short, we will seek to demonstrate that, because our images of the nature of change in the practices of the schools have rested on a simplistic analysis of the reality of schooling, our prescriptions for, and approaches to the task of improvement of schooling have been much less powerful than they must be if we expect to make a difference.

The point of view we will develop in this paper starts from an assumption and a question that flows from this assumption. We assume that the goals of the nineteenth century founders of universal public education have been amply fulfilled and our question is "How was this done?" We are convinced that the answer to this question must be one indispensable basis for acting out any meliorist impulse. We have pursued this question in a preliminary way as it bears on classrooms in another paper[1]--here we wish to broaden that enquiry by asking the questions, "What are we talking about when we discuss the curriculum of the schools?" and "What is the character of change in the curriculum?" Our preliminary answers to these questions, derived from our case study of changes in aspects of the high school curriculum in Gary, Indian between 1940 and 1970, suggests that most existing approaches to the conceptualization of curriculum change are at best partial in the representation that they offer of the reality of schooling.

## II

Our concern with this general problem area, and our first glimmerings of the way in which we now see it had its beginnings in some research and one attempt at innovation that seemed to sum to the conclusion that systematic curriculum change is awesomely complex. Let us begin this discussion with four anecdotes as a way of offering a backdrop for both our later speculations about curriculum change and for the study of Gary we undertook as a way of exploring these speculations:

-- when the first four professors appointed to the faculty of the University of Melbourne, Australia faced the task of constructing a curriculum they urged a reluctant Council (board of trustees) to adopt an (for that time) extremely radical program of the kind that three of them had worked within at the Queens University of Ireland, a curriculum that "was more comprehensive than any other in Britain at that time." The Council would not accept anything so radical, but the upshot of debates between the professors and the Council was a program that was "more liberal than the curriculum offered in any other English university at that time." The program that was adopted at the University of Sydney, which was founded in the same decade, was extremely traditional--the predilections of the lay Council were reinforced by two professors from unreformed Oxbridge.[2]

-- during an attempt to introduce Italian as a new foreign language for the Italian immigrant students in an Australian high school we were met by the school administration (and defeated) by the simple (and, given hindsight, correct) argument that we could not guarantee that the one or two qualified Italian teachers we knew would remain at our school for long enough to provide a continuing program in Italian over the school lives of the cohorts of students we anticipated teaching. We were told that such a program could not be introduced until the state university could and would provide a flow of qualified

and certified Italian teachers. Our task, if we wanted our innovation, was to persuade the university to create a program in Italian that would provide such a flow of potential teachers.

— five years ago, in the course of a status survey into the teaching of Canadian history, we found that, despite the jealously-held prerogative that all provinces claimed to develop programs that were adaptive to regional differences and interests, there were in fact only two Canadian history programs in the country—one common to all English-speaking provinces, the other taught only in Quebec. The program common to the English-speaking provinces had been developed originally in the 1920's and reflected the concerns of English-speaking academic historians of that decade and was, of course, far removed from the concerns of Canadian historians of the 1960's. Needless to say the course had been revised, but such revisions consisted of units added onto the program which brought it up to date temporally--and we found that these units were seemingly rarely taught. Most teachers found it very difficult to escape the temporal and intellectual boundaries of the old course.[3]

-- in the course of a recent evaluation study of an experimental program in social work we found that the faculty teaching the program found it, on the one hand, extremely

> difficult to generate a content that they could use as a basis for their day-by-day teaching that reflected their goals and aspirations for both social work practice and their program while, on the other hand, they found it difficult to escape from the pull of concepts, content, and methods that they had long taught and used. The task of inventing a content that went along with and could be the basis for delivering on their visionary goals about what they might do completely defeated them.[4]

Many examples that support the thrust of this kind of experience can be found in the literature of curriculum and curriculum change. Smith describes a situation in which an English primary school science program persisted in the schools in which it had been installed only for as long as the original adopters remained in the original schools; others did not pick up the program and the program was not institutionalized.[5] There are many examples of programs being defeated by the vested interest of academic inertia--the University of Chicago 1940's experiment in liberal education and the work in the same decade of the pioneering University of Keele (England) were defeated, for example, by the proponents of the unassailable rightness and educative power of the traditional disciplines.[6] Southern reports that examinations in British constitutional history at Oxford preserved some examination question forms almost unaltered from the first years of the subject in the 1870's into the 1920's.[7] The persistence of Silas Marner in the American high school English program is, of course, legendary. The difficulties that developers face in

fields like environmental education, interdisciplinary or area studies, and humanities or integrated social sciences are well known.

A common thread runs through these anecdotes and examples. In all cases the curriculum can be seen as a thing, a form. In the case of the social work development, or in developments in such fields as interdisciplinary or area studies the goals of projects demand the invention of new forms, but the task of invention of this new form is all too often overwhelming--older curricular forms inhibit the search for the new. In the case of the battles at Melbourne, Chicago and Keele differing forms become the foci of essentially political battles between factions representing different interests. In the case of Canadian history, Silas Marner and of our perhaps trivial observation on the persistence of question types, we see curricular forms persisting long after their original justification has lost its force. Finally, in the case of our attempt to introduce Italian and in the report of Smith we see a case for an argument that suggests that, if a curricular idea is to be enacted competently and with a continuity that transcends the life of a given teacher in a given school (at least in a school system with what Bernstein has called strong framing[8]), it must be embedded in an explicitly institutional apparatus of support and control.[9]

## III

It is these formal and institutional characteristics of the curriculum that we see almost all educational enquiry neglecting, or else treating unsympathetically. Perhaps these aspects of the curriculum are too obvious or too obtrusive to demand serious attention. However, something of this obviousness and/or objectionable obtrusiveness appears in a new light when

we invoke Kuhn's term paradigm[10] and ask whether or not the curriculum, at least in the aspect we have been exploring here, might be a schooling-appropriate form that has functions similar to the paradigmatic forms and structures which control and make possible scientific enquiry. As Ziman writes,

> Science stands in the region where the intellectual, the psychological, and the sociological coordinate axes intersect. It is knowledge, therefore intellectual, conceptual, and abstract. It is inevitably created by individual men and women, and therefore has a strong psychological aspect. It is public, and therefore moulded and determined by the social relations between individuals. To keep all these aspects in view simultaneously, and to appreciate their hidden connections is not always easy.[11]

Viewed sociologically scientific activity is work, the creation of potentially consensual knowledge: the means of science, its methods and technologies are designed both to facilitate the creation of knowledge by groups of scientists and to validate such creations. The structures and organizations of science, its journals and professional organizations, its rituals, schools, and libraries are designed purposively to support this work.

> ... Science is a form of Public Knowledge. The whole procedure of publication and citation, the abhorrence of secrecy, the libraries full of periodicals and treatises, Lernfreiheit and Lehrfreiheit,--freedom to learn and freedom to teach--cosmopolitanism and internationalism, conferences, abstract journals and encyclopaedias--all are in the service of the mutual exchange of information.

> But merely to point this out tells us very little about the nature of Science itself. I want to go further and suggest that the absolute need to communicate one's findings, and to make them acceptable to other people, determines their intellectual form. Objectivity and logical rationality, the supreme characteristics of the Scientific Attitude, are meaningless for the isolated individual; they imply a strong social context, and the sharing of experience and opinion.[12]

* * * * *

> ... we will define science not as a body of knowledge or set of investigatory techniques but as the organized social activity of men and women who are concerned with extending man's body of empirical knowledge through the use of these techniques. The relationships among these people, guided by a set of shared norms, constitute the social characteristics of science.[13]

Schooling is analogous to science inasmuch as it is concerned with intellectual, conceptual and abstract matters. It is moreover co-extensive with science inasmuch as the university and schools are parts of one interlocking educational system. The university, through its research provides schools with their subject-matters and, through its educational programs, provides the schools with teachers. However, the concerns of the universities as research institutions and the schools as teaching institutions diverge in fundamental ways.

The task of the schools as organizations is the meaningful and systematic communication of valued knowledge to, in the case of public education, large aggregates of students by many, many teachers. Within the schools the curriculum specifies both the forms of knowledge that are to be taught inasmuch as it specifies that knowledge which is thought that students of given ages and kinds should know and, concomitantly, the ways and means of that teaching. The curriculum, therefore, not only specifies that which is valued as the knowledge worth having but also serves, by its structure, to define how that knowledge is to be communicated.

Latin, qua classical studies, for example, is a set of problems thought to inhere in the corpus of texts written in Latin. Qua the schools, Latin is a smaller collection of texts and procedures (prose composition and the like) organized in the interests of "educative" potency and pedagogic communicability and efficacy. When Latin is considered in the context of schooling, it is its curricular aspects which come to the forefront; for the schools and for teacher training institutions Caesar's Gallic Wars is a text chosen because of its accessibility to students with limited facility in Latin, it is a text which is to be taught to teachers because they will teach it in schools, and it is a text which is to be explored inasmuch as it is educationally and pedagogically rather than intellectually problematic. From the viewpoint of the teacher the Gallic Wars is a text which is to be focussed on inasmuch as it presents instructional problems; the teacher's investment in this text is seen by him in instructional terms--he must know its potential for the "education" of his students, he must know and be able to anticipate all the difficulties that it might present the students he will

teach, and he must have at hand methods and procedures which he can invoke as necessary to obviate any difficulties, anticipated or unanticipated, that might occur when a particular class encounters this text. Inasmuch as the mass teaching of Latin requires that many, many teachers have these competences and capabilities structures of teacher training, certification, and the like have been created to minimize possible variance among teachers in competence and capability to teach, at least adequately, while the existence of many teachers teaching one or a small number of known texts to students of known kinds permits and makes possible collective attention to these same problems. It is this collective and public concern for the problems in teaching a bounded and known universe of content that makes possible school texts, published aids and the like.

Analogous tasks and analogous structures are found in all for all of the discourses (mathematics, arts and the like) that are exploited in schools. Discourses become in the schools subjects which, in their turn, permit, and become the means by which teachers are deployed for the systematic instruction of millions of students over the twelve or so years they are in school. As such, subjects become the means by which the energies and capacities of teachers are routinely and systematically focussed on common tasks: teachers leave given schools but students remain--it is the existence of a program organized in routinized ways that makes it possible for one teacher to pick up where another left off, whether in mid-year or at the end of a year. It is the existence of subjects which makes possible common endeavors by the school system--the systematic training of teachers, texts and apparatus, and the like. Subjects represent, in other words, the foci and means of institutional

investment by the agencies of schooling towards the furtherance of their work. They are, in this aspect, the corollaries of the instruments and means of collaboration that institutionalized scientific enquiries must have if they are to transcend the limitations of one man and his experience.

Yet, clearly, while subjects do make schooling possible, they are also the source of impediments to real change in the forms and character of schooling. All too often the names of subjects connote other ages; all too often it is the potency of the existing subjects in the curriculum and the values and methods associated with those subjects that must be broken before change in schooling is possible. Why is this so?

Mastery of the contents and means of the subjects of the school program takes many years. The mathematics teacher needs to know the answer to (or the algorithm that will give him an answer to) every problem that he might set his classes and, hopefully, every difficulty that a student might have with any topic. A Latin or French teacher must know every construction and allusion in the texts he will teach. Teachers acquire these competencies through mastery of the subjects which made up their own schooling, through modelling on their own teachers, and through experience in teaching.

Few short-run educational experiences can be expected to train effectively for a mastery of the large range of cognitive and pedagogical skills that make up the craft of the teacher.[14] Given the diffuseness of these skills and the diffuseness of the ends to which they are directed no procedures exist for effectively pointing to the single clusters of behaviors which might be modified in the interests of change in teaching. The only

control which a school system has over its teachers, how they teach, or what they teach is its ability to select who will be appointed to its staff and who will be tenured.

The problems inherent in the control of anything so diffuse as teaching are aggravated by the occupational characteristics of a teacher's role. Effective teaching requires that teacher be invested in their classrooms: the focus of a teacher's professional life and concern is, and should be their classes. Teachers must monitor their own instruction and their own use of the materials and they must look to their own classes and the success of their students for their professional satisfactions. A teacher's reward and satisfaction usually comes in response to effort placed on the classroom, and given the difficulties faced in achieving "success" with students, can be maximized only if sources of reward are appropriately diffuse. As Lortie writes:

> Individual teachers can make the most of the transitive rewards [of the classroom] if there is freedom for them to choose the criteria and techniques to be used in assessing student performance. Only then can individual teachers select the criteria and techniques which, holding meaning for them, provide a sense of genuine attainment of transitive outcomes. Thus teachers have a stake in warding off controls which reduce their options in the selection of working goals and assessment procedures. The resentment some teachers show towards the system-wide use of standardized tests is a case in point; such tests force the teacher to direct her efforts to the test itself and

> reduce her control over assessment. We would expect teachers to assert steady pressure on principals to keep supervision sufficiently loose to permit them to use a variety of assessment criteria and procedures.[15]

Curriculum change, with its inevitable pressure for changed habits, must be anathema to many teachers.

A curricular modus vivendi appropriate to a given time in the life of a school system can, in practice, be achieved by compromise. Teachers can be given autonomy to teach the subjects they know in ways they know so that their students reach adequate levels of proficiency, while administrators can grapple with problems of recruitment and finance, with instructionally-irrelevant issues like community relations or accounting, or with decisions that have clearly demarcated consequences that do not infringe on the major concerns of teachers. Traditionally the curriculum has fallen into a confused area between these tacitly-accepted zones of responsibility. Books can be withdrawn from the English program by an administration when community susceptabilities are offended, but cannot be prescribed with any real assurance that a direction will become a reality. Teachers can be expected to teach in ways that will allow their students to reach given standards of achievements, but only if it is acknowledged that the standard can be trivialized by teaching for the test.[16]

These compromises work out reasonably well in any short run but what happens when a whole subject faces anachronism, not in the schools where it may have a life of its own, but in relation to changes of one kind or another in the world outside the school. Our earlier examples and anec-

dotes suggested that this is a real problem. Change, they suggested, can only occur when there are individuals who have themselves learned some new methods or new contents in the course of their own experience. But these individuals cannot themselves effect lasting systemic change unless structural support of the kind we have been associating with the institution of a subject is offered them. Our analysis of institutional nature of the curriculum gives us a way of accounting for the failures of innovation we described earlier and for such phenomena as the persistence of examinations questions over decades; it gives us few ways of accounting for change, unless we say that change takes place when a new generation of teachers demands change. But this begs our question!

It is this problem of accounting for change that led us to our study of the schools of Gary, Indiana, from 1940 to 1970. These years were marked by unprecedented investment of time and energy at the national level in improvement of curricula and, seemingly, by considerable curriculum change. This might have resulted in halting change at the local level, but there would seem, on the face of it, no reason to doubt that schools did change between 1940 and 1970. Our question was, "How did this happen?" Our hope as we undertook our study was that by following the course of both curricular initiatives that failed and those that succeeded, we might have a basis for a more complete understanding of how curriculum change occurred in this one city, and perhaps others, over these years. We will summarize our findings here and then attempt an assessment of where our findings leave us.[17]

IV

Between 1907 and 1936 William A. Wirt, as superintendent of schools, designed and operationalized a school system in Gary that was both an alternative to traditional schools of the time and resistant to change. The features of the Wirt (or Gary) Plan--a unit form of organization, the platoon plan, and a lengthened school day and year--and the broad curriculum it offered were widely acclaimed and copied between 1910 and 1925. However, by 1938 when Wirt died, the system was neither popular nor visited; few school systems in the country were using any portion of the Wirt Plan. But in Gary the plan was in full use. The development of the curriculum of the Gary school system after 1940 was affected by the Wirt Plan, but also by national developments in curriculum, by forces outside the system, and by perennially scarce resources.

After 1940 three factors compelled the continued use of the Wirt Plan in Gary. The students, alumni, teachers, and residents of Gary were fiercely loyal to the Plan; despite personal coldness and brusqueness, Wirt had garnered a large and devoted group of people around him and his schools. The eight schools in use in Gary in 1940 had been constructed specifically to house the Wirt Plan, enrolling all students from kindergarten through twelfth grade; each school would have required considerable modification to be suitable to a different (and more traditional) educational program. The personnel of the school system had been recruited and then trained in the school system in a way that insured their loyalty to and perpetuation of the Wirt system.

Wirt died in 1938; the following year the Board commissioned a survey of the school system by Purdue University. The survey criticized the tight

administrative control exercised by Wirt, the curricular uniformity among schools, and the generally static condition of the system's program; it questioned the platooning and departmentalization of the elementary grades; it severely criticized curriculum and instruction in specific subject matters, vocational education in particular; and it observed that it was time for Gary to realize that its school system rather than being the model it once was, had become an anachronism and that, instead of assuming it was watched and copied, should begin to observe other systems with an eye toward its own improvement.[18]

Although it was widely felt in Gary that the members of the survey did not understand the school system, the Board of School Trustees staff had both to deal with the survey report and to hire a superintendent to replace Wirt. It chose Charles Lutz, an employee of the Gary school system for the previous eighteen years; Lutz made few changes in the programs of the school system.

Yet, there were instances of system-wide attention to curriculum during Lutz's superintendency. An attempt was made to change the platooning and departmentalization of the elementary grades to a continuous progress, non-graded organization. Although this new plan was approved by the Board in 1942 and again in 1944, it was never operationalized. Yet eventually elementary students were no longer platooned and their subjects were all taught by the same teacher, not as a result of the system-wide decisions, but one school at a time, between 1945 and 1960.

In 1943, because of racial difficulties in several northern cities, Lutz commissioned the Bureau of Intercultural Education to assist teachers in Gary in designing an intercultural curriculum for Gary's segregated

schools. Before any progress was made, white students at Froebel School, the only one of the district's eight unit schools which was integrated, went on strike demanding that black students be sent to a different school. The disturbances that followed the strike ended within six months after a massive mobilization of energy on the part of the system; within two years an integration policy for the school system was put into operation. The effort to install an intercultural curriculum was not equally successful. In the 1946-47 school year one social studies teacher in each school piloted a new intercultural curriculum. However, the majority of Gary's teachers felt that the program was unimportant; seven of the eight principals did not approve of school involvement in community problems.[19] At the end of the year the school system withdrew all support for the program, although it permitted those teachers who wished to use the curriculum to do so. Through the rest of Lutz's superintendency the curriculum in Gary was left unattended. As a result, when he retired in 1955 the curriculum was much as it had been in 1942.

In this respect Gary appears to have been similar to most school systems in the nation. Growing school populations, teacher shortages and inadequate numbers of classrooms preoccupied boards of education. The energies of school boards and administrators and large portions of school budgets were expended on construction rather than curriculum. In the case of social studies, Gary was also typical. Intercultural relations in 1945 was an emerging concern, not of school systems, but of educational organizations and researchers who were conducting pilot programs. It would be twenty years before textbooks and teaching began seriously to reflect the concern.

Yet, between 1942 and 1955 many features of the Wirt system disappeared from Gary's schools. The last of the eight unit schools were built in 1937 and 1939. After that, feeder elementary schools were built--but not because of a policy decision by the Board. The school day and year had both been shortened--the school system found it less expensive to shorten the time students spent in school. Elementary students in feeder schools were no longer platooned or departmentalized. Yet, the new elementary schools were constructed along the same lines as the unit schools, with the elaborate "special" facilities typical of the Wirt years.

In 1955 Charles Lutz was fired; a new survey of the schools by the Public Administration Survey (PAS) released at this time, made many of the same criticisms the Purdue Survey had thirteen years earlier and again recommended urgent and sweeping reform.[20] The static nature of the curriculum, the remnants of the Wirt system, the lack of organized change, and the lack of a mechanism for curriculum improvement were all criticized. As a result of the PAS survey, a new superintendent, Alden Blankenship, was appointed with a mandate for change; he moved quickly to revamp much of the school administration and established a network of thirteen curriculum committees to develop curriculum guides for all secondary subjects. These committees worked for two years to produce in 1957 The Gary Curriculum Guide, Grades 7-12. The changes proposed for some subject matters were far reaching. We looked at the work of the science and vocation education committees in some detail.

The science committee proposed to increase the high school science program from four courses, not all of which were offered in every school, to a total of nine courses including advanced courses in chemistry and physics, to offer these courses in all schools, to change the emphasis in science from "content" to "enquiry," and to move science teaching from traditional classrooms into laboratories. These proposals reflected prescriptions in the science education literature of the time. However, they were not translated into new programs. Only two of the eight schools had laboratories that approached adequacy, and no financial provision was made to remodel and equip new ones; new teachers were not hired to teach the new courses; and there was no provision to re-train teachers to teach "enquiry" instead of "content."

The changes proposed by the science committee did begin to occur after 1960 when the effects of the National Science Foundation support and the National Defense Education Act began to appear in schools. The resources provided to the Gary school system by EDEA and NSF included new science curricula--PSSC Physics, and BSCS biology, and CHEM Study, etc.--institutes to train teachers to use the new curricula, and money to remodel and equip science laboratories. PSSC Physics and one of the BSCS programs was adopted by the Gary schools--outside sources did for science education in Gary what the school system did not do for itself. With these changes teaching in Gary kept pace with progress being made throughout the country. The resources available to Gary were available to all school systems, and the program in Gary followed national trends.

The proposals made in the 1958 Curriculum Guide by the vocational education committee fared no better than did those of the science committee. The vocational education committee had to deal with the criticisms and

recommendations of the PAS survey and also similar ones from the Purdue survey. Both had recommended the creation of a separate vocational-technical school and cooperative vocational programs. But after 1942 the vocational program narrowed in scope until, in 1955, it was almost nonexistent. Board decisions in 1942 and 1944 to create centers where the city's vocational education programs would be housed had resulted in the narrowing of course offerings in other schools, but not in the operation of the new centers. The 1956 Curriculum Committee recommended that an expanded list of courses be offered and that three cooperative programs be established. While the cooperative programs were established and were still in operation in 1970, the new courses were not offered until 1968. The cooperative programs were easily established because they cost the school system very little money. New courses, however, required remodeled and equipped shops; and the system could not assume these costs. By 1965 the school system had nearly solved its overcrowding problem, and it could receive money for constructing a vocational-technical school through the Vocational Education Act of 1963; as a result work on construction of the Gary Area Technical Vocational School was begun in 1965 and completed in 1968.

This brief summary serves as a reminder that although the Gary school system changed comparatively slowly in the thirty years examined, it was a different system in 1970 than in 1940. Most city school systems had gone through a similar transformation in these years. Yet change in most cities occurred as it did in Gary, haltingly. Why?

An examination of the Gary school system in 1970 shows that many of the reforms made in the curriculum of the three subject areas examined here

(social studies, science, and vocational education) had been first proposed by the Purdue Survey of 1942. But it was not until the late 1950's that any movement towards realization of the demands of the Purdue survey occurred. But to focus on surveys like the Purdue and PAS surveys and their demands as we have to this point, is to ignore the many changes in the system that occurred without planning. There seem to have been three kinds of change occurring in the Gary school system between 1940 and 1970. First, there were small-scale changes in methods, materials, and emphases made by individual teachers in their classrooms. The continuing efforts of a few social studies teachers to work with the intercultural curriculum after 1947 is an example of this small-scale change. Second, there was change by drift; major changes occurred piecemeal over a period of time without benefit of policy change. And third, there were deliberative and deliberate changes made at the policy level. The focus of our study was on formal changes and the demands that produced them.

In most of the cases we explored policy changes on the part of the board to institute one innovation or another can be traced to some actor or agency demanding change in system. The surveys that the board commissioned in 1942 and 1955 appear to have been the most insistent and coherent forces for change on the system. Yet actual policy changes have very little relationship to the forces which first articulated the demand for that change; it took twenty years, as we have seen, and the intervention of the federal government, for the reforms in vocational education recommended by the 1942 Purdue Survey to be implemented. Yet, by virtue of its non-responsiveness to the recommendations of the Purdue Survey,

Gary established its typicality as a somewhat representative urban school system. Had it responded on the recommendations that the Purdue Survey or acted out its halting concern for an intercultural education program in the mid-1940's, it would have put itself in the position of becoming a model school system. It did not do this, rather it did not implement the reforms demanded of it at the times that these demands were made, instead it acted in concert with other systems many years later. What does this imply?

Throughout the 'forties until the mid-'fifties the school system of Gary had a backlog of problems and recommended solutions. And it suffered occasional crisis. Crisis received more attention than problems, and immediate problems received more attention than less immediate ones. Buildings and staffing problems were all-consuming and other matters, including curriculum, received little (and rarely efficacious) attention. After 1956 curriculum appeared to receive much more attention in Gary. The building crisis had abated somewhat and suddenly it seemed as if the nation's schools were giving much less attention to curriculum, particularly in science, mathematics, and foreign languages than they might. We saw this movement to a concern with curriculum in Gary. The Gary Post-Tribune, for example, told its readers in January, 1958 that

> A year before the Russian Sputnik hurtled skyward, School Superintendent Alden H. Blankenship realized that the Gary Schools should afford better opportunities for students in the fields of science and mathematics.

> To meet the challenge, the superintendent organized two committees to modernize the curriculum. As a result of this committee's studies, Gary schools today are farther ahead in their program planning than most city schools, as many have not yet tackled the job.

But, despite this concern for curriculum, the attention paid it was not exactly like that paid to budgetary matters or to buildings and sites. In the cases of buildings or accounting, the Board in Gary approved blueprints and procedures and then watched while the buildings were completed according to specification and expenditures were made. Board concern for curriculum, however, stopped with production of the guides. The buildings were constructed because the Board appropriated the money for them; curriculum guides were not operationalized because the Board did not appropriate money for operationalization for, seemingly, the Board lacked resources of both money and knowledge to insure that new curriculum guides resulted in improved teaching. It could not afford to re-train teachers, and it had no way of measuring the extent to which the new curricula were used.

In 1957 Federal involvement in education took on a new character and changed this pattern of importance. New programs were made available at the national level and teachers were offered ideas that they could not create themselves; resources became available to boards that could be used to implement this new thinking through the purchase of new equipment and new facilities. Change was not all-encompassing (chemistry teachers in Gary, for example, did not adopt the newly-developed programs) but at least some changes could occur when it could not, seemingly, take place previously.

Thus, the reforms that took place in Gary after 1957 were inextricably connected with resources. Yet the dismantling of the Wirt plan, the most fundamental change that took place in the systems in the years we studied, were not connected in this same way with funds. Indeed the feature of the Wirt plan were dismembered without any evidence of discussion or planning of any kind, instead they drifted away. New schools were built initially with some of the special features of the Wirt schools, then without these features. And teachers began school by school to abandon the departmentalization that had characterized the Wirt curriculum. Seemingly the district had lost its will to sustain the Wirt plan while a new generation of teachers preferred the home room teaching which was common to most elementary schools in the nation to Gary's ideosyncratic departmentalization.

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In general, then, the findings from our study of Gary support the general thesis we saw embedded in our experiences and found we could support from our reading of the literatures on curriculum innovation, sociology of science, and the institutional organization of schooling. Events in Gary lacked, of course, something of the clarity of our own examples, but that was to be expected. Change did occur in individual classrooms and schools as new men and women entered the school system and brought new aspirations and new conceptions to the task of teaching in the city. A failure of will brought the Wirt system to an end--gradually as the system accepted conventional designs for the new schools that it built. Expectations about what might be taught and how it might be taught changed

over the thirty years we explored, but when these new expectations required new subject forms and new structures for their enactment Gary's schools failed to find for themselves the new ways and means that these new aspirations required. We saw this failure writ large during the reforming period of 1956-58: despite the ambitions projected by the superintendent for the modernization of the science program the best his teachers could do when it came to detailed development was to copy the table of contents from a 1951 text into their new curriculum guide. These teachers could not escape from the control of an old form; the possibility of real change did not emerge until new, externally developed forms were made available by PSSC and BSCS.

Our findings therefore did support the general thrust of our expectations. There were, however, two constants in the setting of Gary which our earlier thinking had not led us to anticipate, resources and the reports of commissions. We had not expected resources to dominate the course of curriculum change in quite the way they did, and we had expected that decision making about curriculum would be political rather than consensual: we expected that decisions would be made by the superintendent and the board between competing values entering the schools as actors with new expectations about the program made their demands on the system. We did not anticipate that establishment commissions would be the most significant sources of demand for change of the curriculum that we would encounter.

Through the efforts of the commissions that appraised it periodically through the thirty years we examined, Gary was made aware of what was thought of as desirable school practice; likewise, both the superintendent and the

system's teachers showed themselves aware of both the possibilities that might be enacted within the Gary schools. In the 'forties the system made an attempt to include intercultural education in the schools while in the 'fifties the teachers' committees showed themselves aware of the then-current prescriptions for both science and vocational education. But awareness did not lead to action on the systemic level. Resources and capabilities were not available to deliver on aspirations and so they were ignored, in the main, by the board through the 'forties and much of the 'fifties as it struggled to house its students, eliminate the threat of a school strike, and provide teachers for its schools. In short, during these years the board and its superintendents devoted themselves to delivering the traditional service of the schools and did not seriously seek any real changes in that service. Only in the late 1950's, when a more or less adequate service was being provided for most students in Gary, did the board devote any attention to questions about the nature of that service. And, inasmuch as many districts experienced the same relief from housing and staffing problems at this same time a national concern for curriculum developed and became possible.

In this movement to a concern for curriculum renewal that occurred in the late 1950's we can see a manifestation of what we now believe are the two functions of the administrative and governing structures which surround the schools and their curriculum, maintenance and change. The first, and more important of these functions, is the delivery of a service, i.e. schooling. The need to deliver this service demands that a school system maintain itself, that it be concerned first with the smooth flow of the service and only secondarily with the nature of that service. The concern

of Gary residents as expressed during much of the period examined was with this aspect of the school system and its service. The civic elite worked to end the racial strike, but not to change curriculum. The preoccupation of parents was with double shifts and overcrowding: this concern was not for the nature of the service that the schools were offering, but over the failure of the school system to provide that service smoothly and equitably. The Gary board spent much of its time over the first fifteen years we examined responding to these problems of maintenance as it wrestled with issues of buildings and finances and spending such funds as it had available on building classrooms, hiring teachers and the like.

The ten post-war years of almost exclusive concern for maintenance problems of this kind had its reward in Gary, as it did in most of the nation's school districts, in the late 1950's. And, as these problems eased, the Gary board was able to give some attention to its other function, to keep itself as modern and current as possible, i.e. to change. Surveys in 1939 and 1955 had told the board what it must be doing if it wished to provide adequate schooling to its children--but few resources had been available locally during the 1940's and inadequate resources were available between 1955-1958 for any action on the recommendations of these surveys to be possible. It took Federal funds (provided by Congress in response to an awareness of long developing gap between aspiration for the schools and reality) to make it possible for Gary to provide any adequate vocational education program (recommended first by the Purdue Survey of 1942), to rebuild its laboratories, or retrain its science teachers. Only when the provision of the basic services of

the schools had been assured could the board face the tasks of considering possible changes in that service.

The identification of maintenance and change as two different functions of local school jurisdiction permits us to understand many of the findings and prescriptions we find in the literature about curriculum change. The concept of maintenance and the concomitant issue of resources for maintenance suggests why the adaptiveness and innovativeness of school systems are so closely related to such fiscal matters as tax base and per pupil expenditures. The wealthier a school district the more likely it is to have resources available over and beyond those required for maintenance; these additional resources can be invested in plant, materials, and activities that will produce change, whether by way of local design or local installation of new programs. The range of resources available to districts produces both a gradient of levels of innovativeness on which individual systems can locate themselves as they look for concrete exemplications of what the prescriptive literature says that schools should be attempting. Wealthier school districts (those with funds over and above those needed for maintenance) can afford to try innovations and, in doing so, serve both as experimenters with change and exemplars for less wealthy districts.

We would suggest that the connection we have identified between availability of resources and curriculum change is firmly determinate. Of course, small-scale changes can take place in individual classrooms provided that such changes do not breach dominant forms too severely and provided that such changes are adaptive to the constraints of existing organizational and physical structures. But whenever curriculum change

calls for the expenditure of significant resources (time, expertize or money) such resources must be available if change is to be carried forward. And if fundamental systemic change is sought or required the problems associated with changing the repertoires of habitual behaviors of many, many teachers must be faced. Local districts rarely have resources available for these tasks; at best new program designs may be picked up haltingly, by one teacher at a time, in different ways and in different degrees.

The literature of curriculum development has only rarely considered the problem of resources. When we overlay this conception of the costs of innovation on our initial conception of the social system that is curriculum we have, we believe, a way of accounting for both the conservatism of the school program as well as for change. The expense of systemic change ensures, to a considerable extent, that change will take place only slowly. Teachers cannot be re-educated en masse, but individual ambitious teachers can move to districts that have resources available at the margin for installation and exploration of new possibilities. These districts are the places in which new possibilities and new forms are explored and operationalized. But even these districts face limitations on what they might undertake. Definitionally, their teachers are teachers and are, to some extent, disenabled by virtue of their experience from participating as creators in the design of new forms for the curriculum. This task of fundamental design takes place outside the schools, in universities and consortia of one kind or another as randomly assembled groups of individuals respond creatively to some demand from their environment. It is these original designers who must meet conflict of the kind found earlier

in Chicago and Keele over the relative virtues of new and old curricular forms. If such innovators succeed in overcoming their opponents (as they did in Melbourne) their ideas filter through the school system as disciples carry a new conception to new places. At some point a new idea becomes a clear possibility that all schools must explore, at some later point it becomes something that must be adopted--but at that point it becomes something that must be adopted, the problem becomes not the virtue of the idea, but the feasibility of adoption--more often than not a problem of resource availability. Are there teachers who can teach the new program? Are there funds available to build the plant required? Some districts do have the resources to recruit new kinds of teachers or build new plants; some districts have such resources at times of upturn and peaking in the business cycle; others require external subvention of one kind or another before they can contemplate any change.

The literature of curriculum has only rarely considered these linkages between resources and change in this way. This is unfortunate; the public policy issues entailed in problem area are both awesome and fascinating. When, for example, does a categorical Federal or state grant become converted from a change to a maintenance purpose and so cease to serve its original incentive function? But while questions of this kind are intriguing they represent only part of the problems that curriculum policy-making must consider. Change takes place within the enveloping context of organizational structures and issues of resources are only salient as they bear on, and are embedded in structures. It is change in structures that creates the costs of change. We must distinguish between the one-shot change undertakings of the kind we saw illustrated in

our study in Gary (a response, when it is all said and done to twenty or more years of resource-induced inaction on the part of schools) and the task of self-renewing change that has, we suggested in our first pages, been the ideal that curriculists have clung to. That task requires, as we have been suggesting here, that we think about the structures within which designs might take place and the costs of such designs as carefully as we think about the possible forms that we might seek to enact by way of new curricular designs. Designs must be linked to and articulated within appropriate systemic structures. Without concern for such structures a concern for design addresses only a small part of the problem.

NOTES

1. Ian Westbury, "Conventional Classrooms, 'Open' Classrooms, and the Technology of Teaching," Journal of Curriculum Studies, in press.

2. Ian Westbury, "The Melbourne and Sydney Arts Courses 1851-63," in Melbourne Studies in Education 1961-62. E.L. French, editor (Parkville: Melbourne University Press, 1963); see also Eric Ashby, Universities: British, Indian, African. London: Weidenfeld and Nicolson, 1966.

3. See A.B. Hodgetts. What Culture? What Heritage? Toronto, Ontario: Ontario Institute for Studies in Education, 1968, ch.

4. Ian Westbury, "Evaluation of a Goal-Focussed Program in Social Work." Paper presented to annual meeting of the American Education Research Association, New Orleans, February, 1973.

5. M.P. Smith, "Curriculum Change at the Local Level," Journal of Curriculum Studies, 3 (1971).

6. See Neil J. Wilkof, History and the Grand Design, unpublished master's thesis, University of Chicago, 1973; W.B. Gallie, A New University: A.D. Lindsay and the Keele Experiment. London: Chatto and Windus, 1960.

7. Richard Southern, The Shape and Substance of Academic History. Oxford: Clarendon Press, 1961.

8. Basil Bernstein, "On the Classification and Framing of Educational Knowledge," in Basil Bernstein, Class, Codes and Control, I. London: Routledge and Kegan Paul, 1971.

9. For a discussion of these issues as they bear on the introduction of a new subject in the program of the secondary school, see Richard Carlton, "Sociology in the High School Curriculum: A Problem in Cultural Delay," Interchange, 3 (1972), pp. 178-87.

10. Thomas S. Kuhn, The Structure of Scientific Revolutions, 2nd ed. (Chicago: University of Chicago Press, 1970).

11. John Ziman, Public Knowledge. (Cambridge: Cambridge University Press, 1968) p. 11.

12. Ibid., pp. 143-44.

13. Norman W. Storer, The Social System of Science. New York: Holt, Rinehart and Winston, 1966, p. 3.

14. Dan C. Lortie, "The Balance of Autonomy and Control in Elementary School Teaching," in The Semi-Professions and their Organization. Amitai Etzioni, editor (New York: Free Press, 1969), pp. 10-11, 27-30.

15. Ibid., pp. 36-37.

16. Ibid., pp. 12-14.

17. The themes of this section are explored further in W. Lynn McKinney, Curriculum Change and Curriculum Policy-Making: A Study of Aspects of the Curriculum of the Gary Public Schools 1940-70. Dissertation in progress.

18. The Purdue University Survey of the Gary Schools, 1942. Papers of the Board of School Trustees, Gary, Indiana.

19. Dana P. Whitmer, Proposed Extensions in the School and Classrooms Programs for Intergroup Education in the Public Schools of Gary, Indiana. Unpublished doctoral dissertation, Ohio State University, 1949.

20. Public Administration Service, The Public School System of Gary, Indiana, 1955. Papers of the Board of School Trustees, Gary, Indiana.